SEQUENCE LISTING

<110>   RheinBiotech Limited Liability Company for New Biotechnological
        Processes and Products
        Romano, Ivano
        Gellissen, Gerd
        DeVergilio, Claudio

<120>   HEAT-INDUCIBLE PROMOTER

<130>   029474-5006

<140>   US 09/927,811
<141>   2001-08-09

<150>   PCT/EP00/01144
<151>   2000-02-11

<160>   33

<170>   PatentIn version 3.2

<210>   1
<211>   792
<212>   DNA
<213>   Hansenula polymorpha

<400>   1
cttaaatacc acaataggaa aattatcaat aaagcttttc ggatttcatt acgttatatc   60

gcaaaaaaat agtcgagctt tctgaaccgt tcgttaataa aaaaatagtt ttttcagatt   120

tctatgtgag gcagtcacga tagaattcca tcgaactcgt cagcgccaaa tgtgaatgcg   180

gctttcaaaa gctttgtcga atttgggatg ggaatccatg aatcgaagat gtcaaaatgg   240

gggatcacaa aagtacactc acgaggaaaa tcaaaacctt ctcgtacctt taacacatac   300

ggaaatgatc gatcgatttg agaagattcc tcaatgattt tcgtcatata taggtatctg   360

aggtatttat ggaccgattc gtaataacat catatacatc gcgctttgtc cctgtcccag   420

agatttcgat gaaaaaagcg aattttattc taatatttga agcatgccaa acatggggca   480

gttgatttgt gtgagggtaa aatatcatga attgcaccca tcaaatgcag caagatattg   540

accaatccta taatagaaaa cagacttacc acaaatagat tgtgatgacg atattatgaa   600

tctccagatg aaaggctcga aagctatgaa gcctcttgaa acttttcatg gtgagataat   660

attttcgaaa tttccacgaa cttctaaaac gcaattattg aatataaagg aaaaataata   720

tttccatata gcaagcaaat caagctgcac tcctcatcct taaaactaat aaatcttacc   780

catttgatac ca   792

<210>   2

```
<211>  15
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Consensus sequence for a heat shock element

<220>
<221>  misc_feature
<222>  (1)..(15)
<223>  n may be a,c,t, or g

<400>  2
ngaannnnnn ngaan                                                        15

<210>  3
<211>  15
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Special embodiment of the heat shock element

<220>
<221>  misc_feature
<222>  (1)..(15)
<223>  n is a, c, t,or g; b is g, c, or t; w is a or t; and m is c or a

<400>  3
ngaannbwmn ngaan                                                        15

<210>  4
<211>  15
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Nucleic acid sequence of a heat shock element

<400>  4
tgaagcctct tgaaa                                                        15

<210>  5
<211>  15
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Nucleic acid sequence of a heat shock element

<400>  5
tgaatataaa ggaaa                                                        15

<210>  6
<211>  1903
<212>  DNA
<213>  Hansenula polymorpha
```

<400> 6

```
atggtcaaag gtaatgttat agtggtttca aatagaatcc cagtcactat taagaagact    60

gaagatgatg aaaatggaaa atcaagatac gactatacaa tgtcatcagg cggattagtg   120

acggcattac aagggctcaa aaatccattt cgatggtttg gatggcctgg gatgtctgtt   180

gatagcgaac agggacgaca aactgtcgag cgggatttga aggaaaagtt caattgttat   240

ccgatatggt taagtgacga aattgcagac ttacattata cggctttag caattctata   300

ctttggccat tgttccacta tcacccaggg gagatgaatt ttgatgaaat tgcttgggcc   360

gcttatttgg aagcaaataa actgttttgc caaacgatct aaaggagat aaaagacggg   420

gacgttatct gggtacatga ttatcatctc atgttgttgc cttcactgct aagagaccaa   480

cttaatagta aggggctacc gaatgtcaaa attggctttt ccttcatac tccttttcct   540

tcaagcgaaa tatacaggat acttcctgta aggaaagaaa ttctcgaagg agtgcttagt   600

tgtgatttga taggtttcca cacctatgat tatgtccgtc actttcttag ttcggttgaa   660

agaatattga aattgcgaac gagcccacaa ggtgttgtct ataatgatag acaggtgact   720

gtaagtgctt atccgattgg cattgacgtt gacaaattct tgaatggtct taagactgat   780

gaggtcaaaa gcaggataaa acagctggaa accagatttg gtaaagattg taaacttatt   840

attggggtgg acaggctgga ttacatcaaa ggtgtacctc aaaaactcca cgcgtttgaa   900

attttcttgg agagacaccc tgagtggatt ggaaaagttg ttttgataca ggtggctgtc   960

ccctcacgag gggacgttga agaatatcaa tctttgaggg cagctgtaaa tgagctagtg  1020

ggaagaatca atggtagatt tggtaccgtc gaatttgttc ctatccattt ccttcataaa  1080

agcgtgaact tccaagagct gatatctgtc tacgctgcta gtgatgtttg tgtagtgtca  1140

tcgacacggg acggaatgaa tttggtcagt tatgaataca ttgcttgtca acaagatcga  1200

aagggatctc tagtactaag tgaatttgcg ggagctgctc agtcattaaa tggcgctctc  1260

gtagtgaatc catggaatac agaagaactc agtgaagcta tttacgaagg cttgatcatg  1320

agtgaagaga aaaggagggg caattttcag aagatgttca agtacattga gaaatatact  1380

gcaagttatt ggggagagaa ctttgtgaaa gaattgacga gagtgtgatt actgtggttt  1440

gcaggttaat ttgaaatgtt cacttgtact tgaagaattt tatattatat acatgttata  1500

catcaatagg ataaaaatta agtagacaaa gttatcattt tgttgggctg taaaaattga  1560

acgataacaa tatatttgac aaaattaatt tgatctaatt gagctggagg gcgtaatata  1620

tttggtttcc tgaatcatct tgtagatcac aatatggggc agcttctttc gcagccgatc  1680
```

acagagaaac acatcacact tgtccaacat gatcacatat cgcattcaat cggggaaatg 1740

caaggataca ggttgaccat ggaagacgcg ttctgtgatt tgaacgaaag aatattcgtg 1800

acggaagagg gacttgacat cagaaaacaa gacgagaata cagagggtga tctggagtct 1860

cttcaaatta acatttatgg tgtctttgac ggacatggcg gtt 1903

<210> 7
<211> 475
<212> PRT
<213> Hansenula polymorpha

<400> 7

Met Val Lys Gly Asn Val Ile Val Val Ser Asn Arg Ile Pro Val Thr
1   5   10   15

Ile Lys Lys Thr Glu Asp Asp Glu Asn Gly Lys Ser Arg Tyr Asp Tyr
            20   25   30

Thr Met Ser Ser Gly Gly Leu Val Thr Ala Leu Gln Gly Leu Lys Asn
        35   40   45

Pro Phe Arg Trp Phe Gly Trp Pro Gly Met Ser Val Asp Ser Glu Gln
    50   55   60

Gly Arg Gln Thr Val Glu Arg Asp Leu Lys Glu Lys Phe Asn Cys Tyr
65   70   75   80

Pro Ile Trp Leu Ser Asp Glu Ile Ala Asp Leu His Tyr Asn Gly Phe
                85   90   95

Ser Asn Ser Ile Leu Trp Pro Leu Phe His Tyr His Pro Gly Glu Met
            100   105   110

Asn Phe Asp Glu Ile Ala Trp Ala Ala Tyr Leu Glu Ala Asn Lys Leu
            115   120   125

Phe Cys Gln Thr Ile Leu Lys Glu Ile Lys Asp Gly Asp Val Ile Trp
    130   135   140

Val His Asp Tyr His Leu Met Leu Leu Pro Ser Leu Leu Arg Asp Gln
145   150   155   160

Leu Asn Ser Lys Gly Leu Pro Asn Val Lys Ile Gly Phe Phe Leu His
            165   170   175

Thr Pro Phe Pro Ser Ser Glu Ile Tyr Arg Ile Leu Pro Val Arg Lys
            180   185   190

Glu Ile Leu Glu Gly Val Leu Ser Cys Asp Leu Ile Gly Phe His Thr
            195   200   205

Tyr Asp Tyr Val Arg His Phe Leu Ser Ser Val Glu Arg Ile Leu Lys
    210   215   220

2013373_1.DOC   4

Leu Arg Thr Ser Pro Gln Gly Val Val Tyr Asn Asp Arg Gln Val Thr
225   230   235   240

Val Ser Ala Tyr Pro Ile Gly Ile Asp Val Asp Lys Phe Leu Asn Gly
                245   250   255

Leu Lys Thr Asp Glu Val Lys Ser Arg Ile Lys Gln Leu Glu Thr Arg
                260   265   270

Phe Gly Lys Asp Cys Lys Leu Ile Ile Gly Val Asp Arg Leu Asp Tyr
                275   280   285

Ile Lys Gly Val Pro Gln Lys Leu His Ala Phe Glu Ile Phe Leu Glu
                290   295   300

Arg His Pro Glu Trp Ile Gly Lys Val Val Leu Ile Gln Val Ala Val
305   310   315   320

Pro Ser Arg Gly Asp Val Glu Glu Tyr Gln Ser Leu Arg Ala Ala Val
                325   330   335

Asn Glu Leu Val Gly Arg Ile Asn Gly Arg Phe Gly Thr Val Glu Phe
                340   345   350

Val Pro Ile His Phe Leu His Lys Ser Val Asn Phe Gln Glu Leu Ile
                355   360   365

Ser Val Tyr Ala Ala Ser Asp Val Cys Val Val Ser Ser Thr Arg Asp
                370   375   380

Gly Met Asn Leu Val Ser Tyr Glu Tyr Ile Ala Cys Gln Gln Asp Arg
385   390   395   400

Lys Gly Ser Leu Val Leu Ser Glu Phe Ala Gly Ala Ala Gln Ser Leu
                405   410   415

Asn Gly Ala Leu Val Val Asn Pro Trp Asn Thr Glu Glu Leu Ser Glu
                420   425   430

Ala Ile Tyr Glu Gly Leu Ile Met Ser Glu Glu Lys Arg Arg Gly Asn
                435   440   445

Phe Gln Lys Met Phe Lys Tyr Ile Glu Lys Tyr Thr Ala Ser Tyr Trp
                450   455   460

Gly Glu Asn Phe Val Lys Glu Leu Thr Arg Val
465   470   475

<210>   8
<211>   2695
<212>   DNA
<213>   Hansenula polymorpha

<400>   8
cttaaatacc acaataggaa aattatcaat aaagcttttc ggatttcatt acgttatatc   60

```
gcaaaaaaat agtcgagctt tctgaaccgt tcgttaataa aaaaatagtt ttttcagatt    120

tctatgtgag gcagtcacga tagaattcca tcgaactcgt cagcgccaaa tgtgaatgcg    180

gctttcaaaa gctttgtcga atttgggatg ggaatccatg aatcgaagat gtcaaaatgg    240

gggatcacaa aagtacactc acgaggaaaa tcaaaacctt ctcgtacctt taacacatac    300

ggaaatgatc gatcgatttg agaagattcc tcaatgattt tcgtcatata taggtatctg    360

aggtatttat ggaccgattc gtaataacat catatacatc gcgctttgtc cctgtcccag    420

agatttcgat gaaaaaagcg aattttattc taatatttga agcatgccaa acatggggca    480

gttgatttgt gtgagggtaa aatatcatga attgcaccca tcaaatgcag caagatattg    540

accaatccta taatagaaaa cagacttacc acaaatagat tgtgatgacg atattatgaa    600

tctccagatg aaaggctcga aagctatgaa gcctcttgaa acttttcatg gtgagataat    660

attttcgaaa tttccacgaa cttctaaaac gcaattattg aatataaagg aaaaataata    720

tttccatata gcaagcaaat caagctgcac tcctcatcct taaaactaat aaatcttacc    780

catttgatac caatggtcaa aggtaatgtt atagtggttt caaatagaat cccagtcact    840

attaagaaga ctgaagatga tgaaaatgga aaatcaagat acgactatac aatgtcatca    900

ggcggattag tgacggcatt acaagggctc aaaaatccat ttcgatggtt tggatggcct    960

gggatgtctg ttgatagcga acagggacga caaactgtcg agcgggattt gaaggaaaag   1020

ttcaattgtt atccgatatg gttaagtgac gaaattgcag acttacatta taacggcttt   1080

agcaattcta tactttggcc attgttccac tatcacccag gggagatgaa ttttgatgaa   1140

attgcttggg ccgcttattt ggaagcaaat aaactgtttt gccaaacgat cttaaaggag   1200

ataaaagacg gggacgttat ctgggtacat gattatcatc tcatgttgtt gccttcactg   1260

ctaagagacc aacttaatag taaggggcta ccgaatgtca aaattggctt tttccttcat   1320

actccttttc cttcaagcga aatatacagg atacttcctg taaggaaaga aattctcgaa   1380

ggagtgctta gttgtgattt gataggtttc cacacctatg attatgtccg tcactttctt   1440

agttcggttg aaagaatatt gaaattgcga acgagcccac aaggtgttgt ctataatgat   1500

agacaggtga ctgtaagtgc ttatccgatt ggcattgacg ttgacaaatt cttgaatggt   1560

cttaagactg atgaggtcaa aagcaggata aaacagctgg aaaccagatt tggtaaagat   1620

tgtaaactta ttattggggt ggacaggctg gattacatca aaggtgtacc tcaaaaactc   1680

cacgcgtttg aaattttctt ggagagacac cctgagtgga ttggaaaagt tgttttgata   1740

caggtggctg tcccctcacg aggggacgtt gaagaatatc aatctttgag ggcagctgta   1800
```

```
aatgagctag tgggaagaat caatggtaga tttggtaccg tcgaatttgt tcctatccat  1860

ttccttcata aaagcgtgaa cttccaagag ctgatatctg tctacgctgc tagtgatgtt  1920

tgtgtagtgt catcgacacg ggacggaatg aatttggtca gttatgaata cattgcttgt  1980

caacaagatc gaaagggatc tctagtacta agtgaatttg cgggagctgc tcagtcatta  2040

aatggcgctc tcgtagtgaa tccatggaat acagaagaac tcagtgaagc tatttacgaa  2100

ggcttgatca tgagtgaaga gaaaaggagg ggcaattttc agaagatgtt caagtacatt  2160

gagaaatata ctgcaagtta ttggggagag aactttgtga aagaattgac gagagtgtga  2220

ttactgtggt ttgcaggtta atttgaaatg ttcacttgta cttgaagaat tttatattat  2280

atacatgtta tacatcaata ggataaaaat taagtagaca aagttatcat tttgttgggc  2340

tgtaaaaatt gaacgataac aatatatttg acaaaattaa tttgatctaa ttgagctgga  2400

gggcgtaata tatttggttt cctgaatcat cttgtagatc acaatatggg gcagcttctt  2460

tcgcagccga tcacagagaa acacatcaca cttgtccaac atgatcacat atcgcattca  2520

atcggggaaa tgcaaggata caggttgacc atggaagacg cgttctgtga tttgaacgaa  2580

agaatattcg tgacggaaga gggacttgac atcagaaaac aagacgagaa tacagagggt  2640

gatctggagt ctcttcaaat taacatttat ggtgtctttg acggacatgg cggtt        2695

<210>  9
<211>  26
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  PCR primer F1 (forward)

<220>
<221>  misc_feature
<222>  (1)..(26)
<223>  n is a, c, t, or g; v is a, c, or g; y is c or t;

<400>  9
tggccvytnt tccaytacca tccygg                                        26

<210>  10
<211>  24
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  PCR primer R1 (backward)

<220>
<221>  misc_feature
```

```
<222>  (1)..(24)
<223>  r is a or g; b is  c, g, or t; y is c or t, h is a, c, or t

<400>  10
ggcrtgbaay ttytghggha cacc                                              24

<210>  11
<211>  23
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Sequencing Primer F3 (forward)

<400>  11
ggaagcaaat aaactgtttt gcc                                               23

<210>  12
<211>  23
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Sequencing primer F4 (forward)

<400>  12
ctgtaagtgc ttatccgatt ggc                                               23

<210>  13
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Sequencing primer F6 (forward)

<400>  13
ggacgacaaa ctgtcgagcg gg                                                22

<210>  14
<211>  22
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Sequencing primer F7 (forward)

<400>  14
catactcctt ttccttcaag cg                                                22

<210>  15
<211>  21
<212>  DNA
<213>  Artificial Sequence

<220>
<223>  Sequencing primer F8 (forward)
```

```
<400>   15
aaagcgtgaa cttccaagag c                                         21

<210>   16
<211>   22
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer F9 (forward)

<400>   16
gcgtgtgatt actgtggttt gc                                        22

<210>   17
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer F10 (forward)

<400>   17
ggtgagataa tattttcgaa atttcc                                    26

<210>   18
<211>   27
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer F11 (forward)

<400>   18
cccatcaaat gcagcaagat attgacc                                   27

<210>   19
<211>   21
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer F3 (backward)

<400>   19
ccattcaaga atttgtcaac g                                         21

<210>   20
<211>   23
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer R4 (backward)

<400>   20
```

```
catgagatga taatcatgta ccc                                           23

<210>   21
<211>   23
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing Primer R5 (backward)

<400>   21
caattttgac attcggtagc ccc                                           23

<210>   22
<211>   22
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer R6 (backward)

<400>   22
gtaatgccgt cactaatccg cc                                            22

<210>   23
<211>   23
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer R7 (backward)

<400>   23
gaacatcttc tgaaaattgc ccc                                           23

<210>   24
<211>   21
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer R8 (backward)

<400>   24
ctagctcatt tacagctgcc c                                             21

<210>   25
<211>   25
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer R9 (backward)

<400>   25
catagctttc gagcctttca tctgg                                         25
```

```
<210>   26
<211>   24
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer Plasm.  F (forward)

<400>   26
ggcgagcccg atcttcccca tcgg                                              24


<210>   27
<211>   26
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Sequencing primer  Plasm.  R (backward)

<400>   27
ctgctcgctt cgctacttgg agccac                                           26


<210>   28
<211>   15
<212>   DNA
<213>   Saccharomyces cerevisiae


<220>
<221>   misc_feature
<223>   Heat shock element

<400>   28
ggaacagaac aatcg                                                       15


<210>   29
<211>   249
<212>   DNA
<213>   S. cerevisiae
<220>
<221>   misc_feature
<223>   TPS1

<400>   29
agcgatgaaa tcgcagactt actctacaac tggttcagta attctattct atggccgtta     60

ttccattacc atcctggtga gatcaatttc gacgagaatg cgtggtcggc atacaacgag    120

gcaaaccaga cgttcaccaa cgagattgcg ttggtgtcga caggctggat tacatcaaag    180

gtgtgcctca gaagttgcac gccatggaag tgtttctgaa cgagcatcca gaatggaggg    240

gcaaggttg                                                            249


<210>   30
<211>   249
```

```
<212>   DNA
<213>   K. lactis
<220>
<221>   misc_feature
<223>   TPS1

<400>   30
agtgacgaag ttgctgatct tcattacaac ggattttcca actctattct atggccattg     60

ttccattacc atcctggtga gatcactttc gatgacactg catggttggc gtacaacgag    120

gcaaatatgg cttttgccga tgaaattgaa ttggggtcga tcgtcttgat tacatcaaag    180

gtgttcctca gaagttacac gccttggaag tgttcctcgg tgcgcatcct gaatggattg    240

gtaaggtgg                                                             249


<210>   31
<211>   249
<212>   DNA
<213>   C. albicans
<220>
<221>   misc_feature
<223>   TPS1

<400>   31
agtgatacga ttgctgattt acattataat gggtttttcaa atagtatttt atggccactt    60

ttccattatc atcctgggga aatgaacttt gatgaaaatg catgggcagc atatattgaa    120

gccaataaga aatttgcatt ggaaatagtg ttggtgttga tagattagac tatatcaaag    180

gtgttccgca aaaattacat gcatttgaag tcttttttgaa tgaaaatccc gaatggattg    240

gcaaagtag                                                             249


<210>   32
<211>   249
<212>   DNA
<213>   S. pombe
<220>
<221>   misc_feature
<223>   TPS1

<400>   32
gatgatgaga ctgccgaccg ccattacaac ggatttagta acagcattct ttggcccttg    60

ttccactacc atcctggtga aattaatttt gacgaggaaa attgggaggc ctatcgtgcg    120

gctaactacg cttttgccga ggccattgtg tgggtgtcga tcgtttggac tacattaagg    180

gtgttcccca aaaattccat gcctttgaag tgttcttaga acaataccct gaatgggttg    240

gaaaggtcg                                                             249
```

```
<210>  33
<211>  250
<212>  DNA
<213>  A. niger
<220>
<221>  misc_feature
<223>  TPS1

<400>  33
ctgaaggcgc ttgcttgctg acggatatcc actgctcaca gactccattc tctggcccct      60

cttccattac catcccggtg agattacctt tgacgagtcc gcctgggaag catacaagga     120

ggccaaccgt cttttcgcca aagcggttgc gtgggtgtgg accgcctgga ttacatcaaa     180

ggtgtccccc agaagttaca tgcccttgag gtgttcctta gcgatcatcc ggagtgggtt     240

ggcaaggttg                                                            250
```